

## **ABSTRACT OF THE DISCLOSURE**

A method of writing a waveguide using an ultrashort laser beam is disclosed. The laser beam is directed to a substrate in transverse relation to a waveguide propagation axis to generate an ultrashort laser pulse focus in the substrate. A refractive index is modified in an  
5 affected region in the substrate along the waveguide propagation axis via the ultrashort laser pulse focus, and the ultrashort laser pulse focus is moved in a direction other than the waveguide propagation axis to generate a widened affected region along the waveguide propagation axis. The widened affected region has a cross-sectional profile capable of supporting a fundamental mode of a signal having a telecommunications infrared (TIR)  
10 wavelength, while the affected region has a cross-sectional profile incapable of supporting the fundamental mode of the signal having the TIR wavelength.